

1. *For Erad - Curacao*

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Entomology Research Branch

%Veterinary Service
Postbox 85
Curacao, N.A.

Sept 7, 1954

To: A. W. Lindquist, Head, Section of Insects Affecting Man and animals
From: R. C. Bushland
Subject: Report on Curacao Visit

Since this is my last day on Curacao, Mr. Baumhover has tabulated the data on the experiment as far as it has progressed so that it might be included in this report.

Records on fly releases and egg mass collections are assembled in the attached table. Also enclosed is a map of the island which shows the pen locations.

You will note that during the past week egg mass collections have declined in most pens. This is difficult to account for since the weather has seemed favorable. In my two weeks here there have been 4 or 5 light showers (total rainfall was probably less than one-half inch). Later Mr. Baumhover will get complete temperature, rainfall, and wind data from the Curacao weather station). There is always a brisk east wind blowing but the wind velocity has not increased since the goat pens were first set up.

Mr. Bitter has estimated the domestic animal population to be approximately as follows:

Goats--25,000, sheep--5,000, dairy cattle (no beef breeds)--3,000, pigs--2,000, donkeys--400, horses--150.

As potential wild hosts there are numerous rabbits (similar to our cottontails) and about 300 Venezuelan deer.

Young of sheep and goats are still being born. Kid goats are numerous--ranging from new-born animals to kids 3 or 4 months old. Near pen No. 9 we noticed several new-born lambs. We frequently see goats nibbling on prickly pear and walking about with pear leaves stuck to their skin. It seems that there should be plenty of wounds for fly breeding.

Yesterday we changed the location of pen No. 10 from the western part of the island to the grounds of the Veterinary Service near the island abbatoir. Mr. Bitter kept a wounded goat and a sheep there earlier and collected egg masses for shipment to Florida. Since pen No. 10

has been unproductive for the last 8 days. I thought it would be well to put the goats where they might have a better chance of furnishing eggs before our releases could affect the number of masses deposited. Today we are also moving pen No. 4, but this pen is being moved only about a hundred yards to place it in what might be a more favorable location.

From now on we do not intend to do any more changing of locations of the 10 established pens. However, if the experiment goes successfully a number of additional temporary goat pens will be set up all over the island in an effort to collect masses. It is also planned for that time (especially after we have finished releasing flies) to operate 10 status traps in an effort to collect adults. At present only one status trap is being run regularly. That is located at our laboratory pen No. 1.

We are naturally disappointed that we have found so few sterile egg masses to date but we hardly know what we should expect. Due to difficulties at Orlando, our releases have not been as planned.. The first release on March 26 of an estimated 13,700 males (plus an equal number of sterile females) represented a distribution rate of about 80 males per square mile dropped along flight lines 1.2 miles (2 kilometers) apart dropping flies one sack every kilometer of flight. The second release was made 5 days later with the flight lanes overlapping so that each lane was half way between those of the first release. Sacks were again dropped 0.6 mile apart. This second release amounted to 50 flies per square mile. The third release on April 1 was inconsequential as far as the whole island is concerned because there were not enough flies for air distribution. We merely scattered them around the city of Willemstad by car to treat an area we could not drop sacks on from the air. (The town area may be important because goats roam all over the place. The better yards are fenced to keep out wandering goats.)

Until we can make regular releases of fairly uniform numbers of sterilized flies it is futile to attempt to compute a released fly density in terms of average numbers of sterile males per square mile per week. At present we can only assume that the sterile egg mass records to date do indicate that some of our released males are mating with "wild" females.

Prospects for the future are much better as we have on hand awaiting full emergence flies shipped from Orlando for release of 6,600 males on April 8 and 5,800 males on April 9 to be put out over the entire island (170 square mile area). Hopkins has advised us by note in the last shipment that production problems have been

overcome and we now expect to receive regular shipments of ample numbers of flies.

Since the natural fly population is lower than originally expected we plan for the next 4 weeks to release flies--treating each area twice weekly--at the rate of 100 males per square mile per week. If those releases result in a large proportion of sterile masses we will continue releasing at that rate and try to achieve eradication with 100 males/sq. mi./week.

I do not want to continue releasing whatever number Orlando sends but would much prefer to discard flies excess to 100 males/sq. mi./week in order to have uniform data to interpret. If we can't control the population with releases of 100 males, then we might increase the release rate to 200, 300 or 400 (whatever you and Dr. Knipling prefer and is within the production capacity at Orlando.)

Mr. Baumhover will proceed with the above outline unless you and Dr. Knipling prefer some other plan. We will welcome your suggestions.

Once Orlando gets production straightened out I am confident that there will be no difficulty in executing the experiment. Mr. Graham returned to begin work at Orlando early this week.

“ Fly shipments are arriving in 24 hours without fail. (National Airlines finally consented to handle the shipments to KLM).” The flies arrive in good condition and emerge satisfactorily and do well in the paper sacks under our present handling conditions.

The Dutch are cooperating perfectly. Mr. Bitter is working enthusiastically and doing his full share. The other Curacao officials could not be more interested, friendly, and helpful. The KLM pilots who fly the release plane are highly competent and always ready to fly on short notice. The land owners at our goat pen locations are cooperating generously. In my opinion organization of the project on Curacao is just ideal and I have full confidence in the proper execution of the experiment.

R.C. Burkland

In duplicate
cc: A. J. Graham

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Once Orlando gets production started, I am confident that there will be no difficulty in extending the experiment. Dr. Graham returned to begin work at Orlando early this week.

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EGG MASS COLLECTIONS AND FLY RELEASE DATA
CURACAO 1954

Number of egg masses at goat pens:

Date	1		2		3		4		5		6		7		8		9		10		Number of males released
	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	
3/16	2	0	0	0	-	-	-	-	-	-	2	0	0	0	0	0	0	0	0	0	
17	2	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
18	5	0	7	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	1	0	
19	1	0	3	0	0	0	2	0	1	0	2	0	1	0	1	0	2	0	4	0	
20	1	0	5	0	2	0	2	0	0	0	1	0	3	0	2	0	2	0	0	0	
21	1	0	5	0	1	0	0	0	3	0	2	0	0	0	4	0	2	0	0	0	
22	0	0	5	0	2	0	1	0	2	0	2	0	2	0	4	0	2	0	2	0	
23	2	0	7	0	3	0	1	0	4	0	2	0	2	0	3	0	5	0	2	0	
24	1	0	4	0	2	0	0	0	4	0	3	0	2	0	3	0	2	0	2	0	
25	2	0	5	0	2	0	4	0	0	0	4	0	3	0	3	0	3	0	0	0	
26	1	0	2	0	1	0	2	0	4	0	3	0	1	0	2	0	2	0	1	0	13,700
27	2	0	5	0	0	0	1	0	2	0	4	0	3	0	2	0	3	0	0	0	
28	1	0	4	0	2	0	0	0	5	0	2	0	2	0	2	0	3	0	4	0	
29	0	0	3	0	1	0	1	0	2	0	4	0	3	0	7	0	3	0	1	0	
30	2	0	9	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	
31	1	0	8	0	4	0	0	0	1	0	2	0	0	0	3	0	2	0	0	0	8,700
4/1	0	0	6	0	2	0	0	0	1	0	4	0	2	0	4	0	1	0	0	0	
2	2	0	10	0	1	1	0	0	3	0	4	0	1	0	2	0	1	0	0	0	
3	2	0	6	0	0	0	0	0	3	0	4	0	1	0	5	0	1	0	0	0	3,600 1/
4	2	0	8	1	0	0	1	0	1	1	4	0	1	0	2	0	00	00	1	0	
5	1	0	7	0	0	0	0	0	2	0	1	0	2	0	0	0	1	0	0	0	
6	3	0	3	0	0	0	1	0	2	1	1	0	0	0	3	0	0	0	0	0	2/
Total	34		118		24		16		46		53		30		54		37		18		
Ave.	1.6		5.4		1.1		0.8		2.2		2.4		1.4		2.5		1.7		0.9		

1/ Released in city of Willemstad only.

2/ Pen moved (see map).

